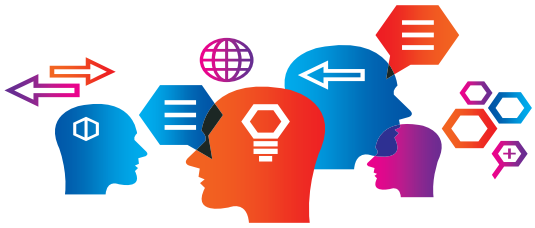
Open Innovation
Crowdsourcing
Civic Hacking



Tapping into the Collective Intelligence of the Public

Imagine having thousands or even millions of volunteers be your human sensors, collect and analyze your data, or validate and visualize your models. The prevalence of internet access, mobile devices, low-cost sensors, advanced analytical tools, and collaborative technology is providing more opportunities to leverage data and services from the public at much broader scales. By tapping into these emerging networks of volunteers, on-the-ground and online, we can enhance our mission, increase situational awareness, and address societal needs.

OPEN INNOVATION

Open innovation approaches, such as crowdsourcing, civic hacking, citizen science, and other participatory techniques, considers the public as valuable resources. Open innovation is a way to engage more with our current and potential users to ensure our official government products are actionable, accessible, and understandable. Engaging the public ensures our government products are relevant and reliable in a changing world with increasingly wicked problems and limited resources. Open innovation encourages interdisciplinary approaches and opportunities that engages the public at multiple scales to enhance our mission and improve government services.

CROWDSOURCING

Crowdsourcing is a participatory approach for gathering ideas, content, or services by soliciting contributions from a large group of people. However, people often raise concerns about the quality of data and services from the public compared to trained experts. Yet, many crowdsourced efforts use rigorous procedures to ensure data quality, such as checking for agreement from multiple volunteers or developing verification protocols. The key is strategically tapping into crowds with pertinent skills, resources, and experiences. Sometimes crowdsourcing might be the only way to ground-truth official efforts or even obtain ground-truth data. In fact, volunteers are often retired experts who are as dedicated and dependable as trained volunteers. More information about federal crowdsourcing and citizen science efforts can be found at CitizenScience.gov and the 2015 White House Office of Science and Technology Policy memorandum "Addressing Societal and Scientific Challenges through Citizen Science and Crowdsourcing." Also, The Crowd & The Cloud is a new public television series that explains the value of crowdsourcing in a networked world.

CIVIC HACKING

Civic hacking, or "hacking for good" different from cyber-attacks, is a creative and collaborative approach to problem solving. Typically, hackathons are gatherings that encourage meaningful engagement between technology developers, designers, data scientists, subject matter experts, civil society, and other relevant stakeholders, making them great places to understand our users, build volunteer community and capacity, as well as recruit new talent. The goal is to produce quick and creative solutions, learn new tools and skills, and meet new people. Government hackathons can promote open innovation efforts, develop quick prototypes to real-world issues, identify use cases with subject matter experts, improve user experience and accessibility to government products and services, and enhance how we communicate and deliver government products and services.

CROWDSOURCING AT FEMA

During the 2017 Hurricane Season, FEMA operationalized crowdsource data from digital volunteer networks to enhance situational awareness for decision making. Specifically, volunteers crowdsourced information from online sources, including social media and other open datasets, to build curated products and maps. Volunteers reviewed satellite imagery creating more comprehensive maps and analyzed aerial imagery to assess damage. Coordination between FEMA and the crowd of digital volunteers created two-way communication to foster unity of effort. As part of the 2018 National Level Exercise FEMA stood-up the crowdsourcing coordination unit to further test and refine how crowdsourcing supports situational awareness.

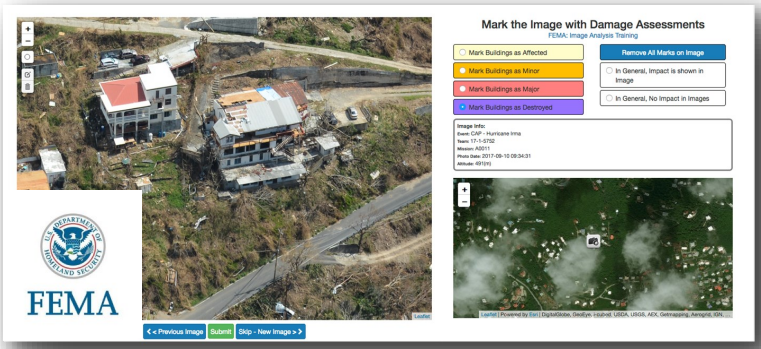
OPEN INOVATION | OPEN DATA | OPEN MAPPING | DIGITAL VOLUNTEERS | SOCIAL MEDIA

FEMA

For More Information or to Get Involved Email:
FEMA-crowdsourcing@fema.dhs.gov

Puerto Rico Crowdsourcing Projects

Similar to other volunteer organizations that provide onsite support for disaster response, there are numerous crowdsourcing organizations who provide structured access to a pool of trained and experienced volunteers. They can organize themselves and the data they are collecting and analyzing in accordance with mission needs.



Crowdsourcing Imagery Analysis for Damage Assessment

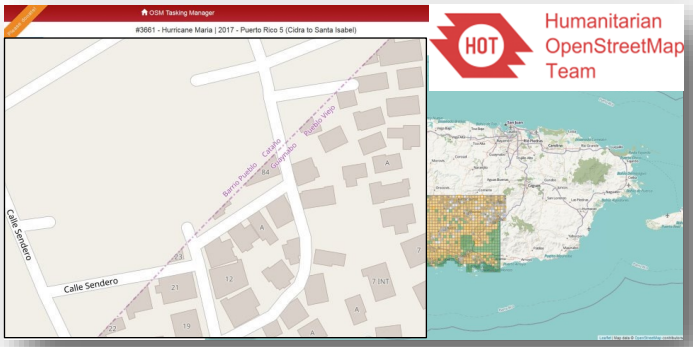
FEMA GIS crowdsourcing imagery analysis tool for damage assessments asked volunteers across the nation to review and mark Civil Air Patrol (CAP) images and other aerial imagery to quickly and efficiently understand the level of damage in an impacted area. This data is being used to accelerate assistance given to survivors in the most damaged areas.

Puerto Rico Buildings & Roads Base Map

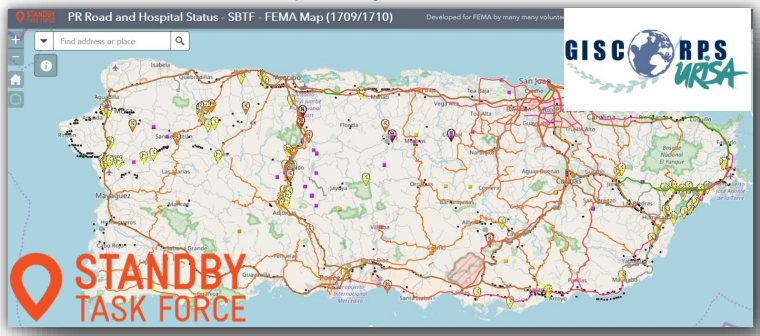
Volunteers: **5,400+**
Buildings mapped: **1.32 million**
Roads mapped: **30,000+ km**

This has been used to build a baseline map of buildings and roads of Puerto Rico in OpenStreetMap. This base map is being leveraged by multiple aspects of response and recovery efforts.

http://bit.ly/HOT-disasters2017



http://bit.ly/SBTF-roads



Road & Bridge Status with Hospitals Map

Volunteers: **120+**
Start & End Date: **10/2/17 – 10/6/17**
This has been used to compile all the road status data into a single, cross referenced map. Hospital, Road and CAP data are also included in this map and updated daily based on files supplied by FEMA, DoD and CAP respectively.

Puerto Rico Info Map 2.0

Volunteers: **450+**; **~120** daily active
Map views: **654,000** visits (Oct 7-13),
2,047,769 visits (Sep 22 - Oct 13)

Puerto Rico Ground Conditions map highlights current status regarding roads, bridges, power lines, fuel, sewage, trash, food, water, healthcare resources, and communications (Wi-fi + cell coverage).

http://bit.ly/CRHQ-PRmap